

REMARKS

Claims 1-8 and 10 are pending in this application. Claim 4 has been amended. Claim 9 has been cancelled. Claim 10 has been added. Applicant reserves the right to pursue the original claims and other claims in this application and in other applications.

Claim 4 is rejected under 35 U.S.C 112, second paragraph as being indefinite. Claim 4 has been amended to only include the internal motor feature. Claim 10 has been added to recite the external motor feature. For this reason, the rejection is respectfully traversed.

Claims 1-5 and 7-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 4,694,210 to Elliott et al. in view of Japanese Patent 2-211043 to Takahashi et al. Reconsideration is respectfully requested. The claimed invention relates to a motor that operates with reduced vibration. That is, claim 1 recites elements that prevent movement of the rotor "in a direction of thrust of the rotary shaft with a rotation of said fan." Elliot and Takahashi are largely unrelated to the claimed invention. Elliot refers to a motor for an automotive fan. Takahashi refers to a system for controlling motor temperature. The references, either taken alone or in combination, have nothing to do with preventing vibration.

Claims 2-4 and 7-8 should be allowed along with claim 1 and for other reasons. In the invention of claim 2, the magnetic flux density is controlled by controlling the amount of magnetization. According to claim 2, the motor is configured of magnetic materials having different magnetic characteristics. As explained in the specification, "the amount of magnetization at the end along the thrust direction of the rotary shaft of the permanent magnet is reduced as compared with that at the center portion in such a manner as to reduce the magnetic attraction force" (page 4, lines 27 to page 5, line 3).

Further, the specification states “employing a plurality of types of magnetic materials including a material 1a high in residual magnetic flux density which are used differently in an axial direction” (page 14, lines 1-6).

Takahashi et al. teaches, in Fig. 3, “surface magnetic flux density of the PM facing said stator core is lower at the end portions, by gaps (S), than at the PM central portion, at portion (7-1) of the stator, along the direction of thrust said rotary shaft” as indicated in the Office Action. Takahashi fails to teach the stator and the rotor of magnetic materials with different magnetic characteristics which thereby create a lower flux density at the ends. Takahashi teaches lowering the flux density along the direction of the thrust and not at the ends.

Claim 6 is rejected under 35 U.S.C 103(a) as being unpatentable over Elliott in view of U.S. Patent 4,015,154 to Tanaka et al. It appears that the rejection of claim 6 is a typo, as claim 6 does not involve synthetic resin. Claim 9, which has been cancelled, is the only claim that specifically recites synthetic resin.

Claim 6 is rejected under 35 U.S.C 103(a) as being unpatentable over Elliott in view of U.S. Patent 3,842,300 to Dakin et al. Reconsideration is respectfully requested. As noted by the examiner, Elliot fails to teach “a thickness of the stator core in the direction of thrust of the rotary shaft is greater than a thickness of the permanent magnet in the direction of thrust of the rotary shaft by an amount substantially equivalent to a displacement of said rotor moved by the thrust with a maximum rotational speed of said fan.” Furthermore, Dakin fails to teach that the thickness of the stator core is greater than that of the permanent magnet “by an amount substantially equivalent to a displacement of said rotor moved by the thrust with a maximum rotational speed of said fan”, as recited in claim 6. Thereby the references, either alone or in combination, fail to teach all the limitations of claim 6.

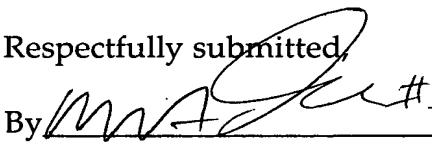
Dakin teaches, in Fig. 4, "a PM motor having a stator and a rotor wherein the axial thickness of the stator is configured to be greater than that of the rotor in the direction of thrust of the rotor shaft" as indicated in the Office Action. However, Daykin does not disclose the feature of this invention that "the axial thickness of the stator and the rotor are changed in such a manner that the stator is thicker than the rotor to prevent the attraction force from being generated even in the case where the rotor moves in an axial direction under the thrust force" (see page 14, lines 15-20). Therefore, for the above mentioned reasons the rejection is respectfully traversed.

For the foregoing reasons, the rejection based on Takahashi should be withdrawn. If the rejections are not withdrawn, the examiner should provide an English language translation of Takahashi (MPEP 706.02 (II)).

In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to pass this application to issue.

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Respectfully submitted,

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